

EXECUTIVE SUMMARY

General Reevaluation Report and Supplemental Environmental Impact Statement

8.5 Square Mile Area

Project Overview

The 8.5 Square Mile Area (SMA), a component of the Modified Water Deliveries to Everglades National Park (MWD) Project, is a populated area in South Miami-Dade County located approximately 6.6 miles south of Tamiami Trail (U.S. 41). It is bounded on the west by the Everglades National Park (ENP), and separated from the more intensively developed urban lands to the east by the L-31N flood protection levee and borrow canal. Since 1992, several of the other features of the MWD Project have been constructed; however, the full implementation of MWD cannot occur until flood mitigation is provided to the 8.5 SMA.

In July 1999, the South Florida Water Management District (SFWMD), the local sponsor for this project, requested that the United States Army Corps of Engineers (USACE) formally develop and evaluate a full array of alternatives for providing flood mitigation to the 8.5 SMA. The USACE has prepared this planning document to assist the Governing Board of the SFWMD in its decision to select a Locally Preferred Alternative (LPA).

This Draft GRR/SEIS presents hydrologic modeling simulations, social impact assessments, real estate information, engineering design and cost analysis, environmental impact assessment, and economics calculations. The SFWMD Governing Board will base its selection of an LPA on this information. The USACE and the Department of Interior (DOI) will use this as a decision document for potential future Federal action on this project.

Project History

The history of this project can be traced back to the Central and Southern Florida Flood Control Project (C&SF) which was designed in an effort to control flooding and better manage water in South Florida. This project called for a complex system of canals, levees, structures, pumps, and impoundments to be constructed.

The Everglades National Park Protection and Expansion Act of 1989 (PL 101-229 Section 104), authorized the Secretary of the Army, upon completion of a General Design Memorandum (GDM), to modify the C&SF project to improve water deliveries to ENP and to take steps to restore ENP natural hydrological

conditions. These modifications were specified in a GDM completed by the Corps of Engineers in 1992. In June 1992, the MWD GDM was approved by the Chief of the Engineering Division, Directorate of Civil Works. This approval fulfilled the requirements of Section 104 of the 1989 ENP Protection and Expansion Act, which directed the Secretary of the Army to select the plan that accomplished the goals of MWD to the maximum extent practicable. A Record of Decision was executed by the USACE in May 1993.

A component of the authorized plan in the GDM included the construction of a flood mitigation system for the 8.5 SMA consisting of a levee, berm and seepage collection system surrounding the area to the north and west which ties into L-31N. The seepage collection canal conveys seepage water to a pump station on the northeast corner and discharges to L-31N Borrow canal.

[Alternative Plans](#)

The USACE, in conjunction with other Federal, state, and local agencies, and with input from Native American tribes and the public, developed an array of nine potential alternatives. A graphic representation depicting features of these alternatives is attached to this Executive Summary.

1. [Alternative No. 1 – Authorized GDM Plan](#). Includes a major levee along the 8.5 SMA perimeter, a seepage canal, a minor levee, and a single pump located at the northeast corner of the 8.5 SMA. The pump discharges seepage water into the L-31N canal where it travels north and is discharged west to the L-29 canal, and ultimately back into the Northeast Shark River Slough.
2. [Alternative No. 2B – Modified GDM Plan](#). Has same basic layout as Alternative No. 1, except for a single pump that will be installed at the southwest corner of the 8.5 SMA, and will discharge seepage water into the C-111 Buffer Area.
3. [Alternative No. 3 – Deep Seepage Barrier Plan](#). Includes a perimeter levee that follows the same alignment (along the 8.5 SMA) as Alternative No. 1. A seepage barrier, located within the levee, extends down 45-70 feet.
4. [Alternative No. 4 – Landowner's Choice Land Acquisition](#). This alternative provides for acquisition of land in the 8.5 SMA through three different means. Current owners have a choice of a) Buy-Out, b) Flowage Easement, or c) Life Estate with Flowage Easement.
5. [Alternative No. 5 – Total Buy-Out Plan](#). All land in the 8.5 SMA will be obtained either from willing sellers or by condemnation.
6. [Alternative No. 6B – Western Portion of 8.5 SMA as Buffer Plan](#). This alternative would convert the western portion of the 8.5 SMA to a buffer area between the developed area and ENP. To the east of the buffer area is a flood protection levee and drainage system, a seepage canal, and an interior levee and a new pumping structure.

7. [Alternative No. 7 – Raise All Roads Plan](#). Includes raising all public roads and restoring them in-kind. All areas within the roads will remain unimproved; however, a flowage easement will be obtained from any areas impacted by additional high water levels associated with the project.
8. [Alternative No. 8A – Western Portion of 8.5 SMA as Flow-way](#). The western area will serve as a buffer area to ENP west of the mitigation levee and as a natural flow-way for diverting flow to the C-111 area. Also included to the east of the flow-way are an interior perimeter levee, and an exterior diversion levee.
9. [Alternative 9 – Adaptive Refinement of GDM Plan](#). This alternative has the same layout of levees and seepage canals as Alternative No. 1. It allows the ability to move forward immediately with implementing the authorized plan, yet provides flexibility to implement another plan at a later date.

Specific impacts associated with each alternative can be found in [Table ES-1](#) of this Executive Summary. A detailed description and a graphic representation of each alternative can be found in the Draft GRR/SEIS.

Project Requirements

Five project requirements were identified as mandatory for any alternative to be considered viable. These requirements are listed below:

1. Do not negatively impact higher stages in ENP as specified in the MWD Project.
2. Mitigate for increased stages within 8.5 SMA resulting from implementation of the MWD Project.
3. Develop a solution that can be permitted by regulatory interests under current and reasonable foreseeable regulations.
4. Ensure no significant impact to existing habitat of endangered or threatened species.
5. Maintain current levels of flood protection for agricultural areas east of L-31N.

Project Objectives

Seven objectives were identified to be used for measuring the performance of each alternative in meeting the goals of the project. These objectives are listed below:

1. Evaluate effects on hydro patterns in NESRS.
2. Evaluate impacts to the landowners and residents of the 8.5 SMA resulting from implementation of MWD.
3. Analyze cost effectiveness.
4. Analyze effects to ecological functions.

5. Evaluate effects on conditions favorable to Federal and State listed endangered species survival.
6. Measure the compatibility with CERP and C-111 projects without adversely impacting the current level of flood protection east of L-31N.
7. Analyze impacts and costs associated with time delays in implementation of alternatives.

Alternatives Analysis

Performance measures were developed for each objective. These measures were used to evaluate the ability of each alternative to meet the objectives. Technical data used in the evaluation included data from hydrologic modeling simulations, social impact assessments, real estate information, engineering design and cost analysis, environmental impact assessment, and economics calculations.

The performance measures were given no weighting or status of relative importance. The results of the analysis are presented in the form of raw data to be assessed without prejudice or implied significance. A summary table containing the results of the analysis is included as [Table ES-1](#)

Alternative Comparisons

Bases for determining the performance of the alternatives under various conditions are evaluated using three comparisons:

1. Federal Requirement: Verifies that flood mitigation requirements are met by each of the alternatives. Mitigation is achieved when water elevations are at or below the conditions as they existed prior to MWD project implementation.
2. Impacts of Existing Conditions: Determines the impacts of each alternative relative to existing conditions.
3. LPA Comparison: Evaluate the Authorized Plan (Alternative No. 1) versus the proposed alternatives (Nos. 2-9) relative to current conditions.

Results of Evaluation

This GRR/SEIS contains no conclusions or recommendations as to the performance of the alternatives, or to the preference of one over any of the others. The data and comparison results contained herein are presented as requested of the USACE by the Governing Board of the SFWMD in a public forum. The Governing Board will evaluate the results of the evaluation and, if it is their desire, select a LPA to the current federally authorized plan. These results will also be used by USACE and DOI in future planning and decision making regarding flood mitigation for the 8.5 SMA.

Plan Implementation

The Draft GRR/SEIS was delivered to the SFWMD on April 3, 2000. Formal public comment will be from April 14, 2000 to May 30, 2000. Public comment may result in refinement of one or more of these alternatives. The SFWMD Governing Board will select an LPA and submit a Letter of Intent to the USACE during this time. The Final decision document (GRR and SEIS) will be made available to the public on June 30, 2000. A public review will be held from June 30, 2000 to July 31, 2000. If required, a Project Cooperation Agreement (PCA) may be amended in early 2001. Current schedules call for design and construction of the project to be completed by December 2003.

Table ES-1

1. Evaluate effects on hydropatterns in NESRS.											
Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 7	Alt 8A	Alt 9
a. Hydroperiod Impacts ⁽¹⁾	Increased Hydroperiod (ac)	N/A	30,207	29,799	30,982	30,982	30,982	30,982	30,982	30,982	30,003
	Decreased Hydroperiod (ac)	N/A	775	1,183	0	0	0	0	0	0	979
b. Water depths ⁽¹⁾	Increased depth (ac)	N/A	59,427	59,694	62,396	62,125	62,125	62,068	62,125	62,029	59,560
	Decreased depth (ac)	N/A	2,538	2,271	0	0	0	0	0	95	2,405
c. Effects on Seasonal variability	Minimum stage, (ft)	5.68	6.61	6.69	6.95	8.25	8.25	6.86	8.25	6.91	6.65
	Maximum stage, (ft)	7.92	8.05	8.07	8.34	8.25	8.25	8.29	8.25	8.31	8.06
	Range of stage, (ft)	2.68	2.02	1.95	1.96	1.95	1.95	1.97	1.95	1.94	1.98
d. Duration of continuous flooding	Consecutive weeks of inundation	39	39	42	42	42	42	45	42	45	41
⁽¹⁾ Value represents the comparison of each alternative versus the Base 95 Condition											
2. Evaluate impacts to the landowners and residents of the 8.5 SMA resulting from											

implementation of the Modified Water Deliveries Project

Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 7	Alt 8A	Alt 9
a. Flood mitigation damages	Area of damages, (ac, %)	0	0	0	4693 73%	N/A	N/A	0	4404 69%	2013 31%	0
b. Flood protection damages	Area of damages, (ac, %)	0	N/A	N/A	5825 90%	N/A	N/A	319 5%	N/A	N/A	N/A
c. Impacts to business	No. of businesses impacted	0	0 0%	0 0%	0 0%	4 100%	4 100%	0 0%	0 0%	0 0%	0 0%
d. Residents relocated	No. of residences impacted	0	1 0.5%	1 0.5%	1 0.5%	17 8%	208 100%	143 69%	1 0.5%	129 62%	1 0.5%
e. Lost agricultural lands	Lost area		0	0	0	0	2642	1175	0	900	0
	(ac)	0	0%	0%	0%	0%	100%	44%	0%	34%	0%
	Lost annual income (\$M)	0	0 0%	0 0%	0 0%	0 0%	6.46 100%	2.78 43%	0 0%	2.30 36%	0 0%
f. Unwilling sellers	No. of property owners	0	0 0%	0 0%	0 0%	80 100%	80 100%	59 74%	0 0%	52 65%	0 0%

3. Analyze Cost Effectiveness

Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 7	Alt 8A	Alt 9
a. Project costs	O&M and Replacement Costs (\$M)	0	.27	.33	0	0	0	.33	.43	.33	.37
	Real Estate Costs (\$M)	0	4.1	4.1	110	123	165	113	112	115	4.1
	Capital Costs (\$M)	0	27	30	131	9.2	14	31	24	27	36
	Total Initial Project Costs (\$M)	0	31	34	241	132	179	144	136	142	40
b. Local Costs	Capital Cost (\$M)	0	0	0	0	0	0	36	0	0	0

	Annual O&M Costs (\$M)	0	0	0	0	0	0	0.90	0	0	0
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1) Capital cost includes all design and construction management costs and contingency; it does not include real estate costs.

2) O & M and Replacement costs are presented as annual costs.

3) O&M costs do not include ecological O&M or water quality monitoring.

4) Real estate costs include all fee simple acquisition and flowage easements.

4. Analyze Effects to Ecological Functions

Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 7	Alt 8A	Alt 9
a. Total Wetlands	Area (ac)	64,881	62,343	62,012	63,694	66,285	66,285	65,131	66,285	65,285	62,179
b. Short-Hydroperiod Marl Forming Wetlands	Area (ac)	5,971	1,690	1,249	1,070	2,399	2,399	2,074	2,399	1,908	1,470
Long-Hydroperiod Peat Forming wetlands	Area (ac)	58,910	60,653	60,763	62,624	63,886	63,886	63,057	63,886	63,377	60,709
c. WRAP Score	Functional Units	13,405	10,640	10,640	11,630	15,853	15,853	15,011	14,695	15,645	10,640

5. Evaluate effects on conditions favorable to Federal and State Listed Endangered Species survival

Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 7	Alt 8A	Alt 9
a. Cape Sable Seaside Sparrow		Through the Draft Coordination Act Report, the USFWS has stated that impacts to the sparrow are not anticipated. Upon recommendation from the USFWS, a full assessment will be conducted to determine effects on the Cape Sable Seaside Sparrow following selection of a preferred alternative.									

6. Measure compatibility with CERP and C-111 projects without adversely impacting the current level of flood protection east of L-31N

Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 7	Alt 8A	Alt 9
a. Compatibility with CERP	Qualitative (R/Y/G)	N/A	Green	Green	Green	Green	Green	Green	Green	Green	Green
b. Compatibility with C-111	Qualitative (R/Y/G)	N/A	Red	Green	Yellow	Yellow	Yellow	Green	Yellow	Green	Green
c. Agricultural lands east of L-31N	Stage (ft)	6.35	6.72	6.57	6.67	6.69	6.69	6.58	6.69	6.67	6.65

7. Analyze impacts and costs associated with time delays in implementation of alternatives

Measure	Units	Base 95	Alt 1	Alt 2B	Alt 3	Alt 4	Alt 5	Alt 6B	Alt 7	Alt 8A	Alt 9
a. Environmental and cultural resources		See Table 7 for discussion of this measure									
b. Ability to meet implementation schedule	Qualitative (R/Y/G)	N/A	Green	Green	Yellow	Red	Red	Red	Red	Red	Green
c. Construction delays	Qualitative (R/Y/G)	N/A	Green	Green	Red	N/A	N/A	Green	Green	Yellow	Green
d. Administrative requirements of alternatives	Qualitative (R/Y/G)	N/A	Green	Green	Yellow	Red	Red	Red	Red	Red	Green